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Agriculture
in the
Classroom

*The Agriculture Newsletter
for Teachers*

FALL EDITION 1996

Attention High School Teachers !

NO SKINNY DIPPING ALLOWED!!

A Quick Dip in the Gene Pool, the latest teaching resource from Ag in the Classroom, has been designed for good clean fun and education! This multi-media package is a terrific introduction for you and your students to the fascinating world of biotechnology. The kit contains, a CD ROM, a VHS video, computer disks and a variety of written resources to complement any secondary science, social studies and language arts class! Lesson plans and background resource materials provide you with a thorough and integrated look at biotechnology - from gene splicing to genetic recombination and DNA fingerprinting, its all there for you to learn! Just how important is biotechnology to the business of agriculture, present and future? Well, get your hands on this kit and you'll soon find out! It's informative and fun for everyone! So jump on into the gene pool!!

For further information contact the Ag in the Classroom Program at (403) 427-2171.

The Ag in the Classroom Program will be joining you at this year's A.T.A. Science Council, on October 4, 5, 6 in Red Deer.

An Ag in the Classroom display booth, chalk-full of all our resources, will be set up for the entire Conference. Also, please come and join us for an information sharing session on agriculture and science, October 6 from 10:45 to 11:45 a.m.. Let us know that you are there representing your school and we will give you a free sample of our latest multi-media resource, *A Quick Dip in the Gene Pool*!!

We look forward to seeing you there!

Rewards for Renovations!!

The Ag in the Classroom Program is currently in the process of renovating ... and we need *your* help!! How can we make the program work best for you and your needs in the classroom? Please give us a call (Cindy at (403) 427-2171) and let us know if you have some ideas for our blue prints! We will get an AITC questionnaire out to you ASAP. Once you have given us feedback, either over the phone or filled out and returned our questionnaire, we will send you our A.I.T.C. video library tape for your resource room. Thank-you...and we look forward to hearing from you!

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Your Students

CAN WIN

a Portable Disc Man

Details Page 3.

NEW Phone No.- (403) 427-2171 --- Fax No. - (403) 422-7755

Alberta
AGRICULTURE, FOOD AND
RURAL DEVELOPMENT
Agricultural Education and
Community Services

2nd Floor, 7000 - 113 Street
Edmonton, Alberta T6H 5T6
FAX (403) 438-3362 Phone (403) 427-2171

LOOK WHAT'S NEW FOR YOU!!

AG IN THE CLASSROOM RESOURCE CHECK-LIST AND ORDER FORM

Let us know what you don't have and we'll be sure to up date you with the latest and greatest resources available through the Ag in the Classroom Program!!

Check off the resources you **do not** have and would like to receive. Return this form to:

Agriculture in the Classroom Program
ATTENTION: Cindy Dixon
2nd Floor, 7000 - 113 Street
Edmonton, Alberta T6H 5T6

clip and send

DIVISION ONE

☐ Ag and Me, Grade One - Newly Revised
☐ Ag and Me, Grade Two - Newly Revised
☐ Ag and Me, Grade Three - Newly Revised
☐ Ag and Me Plus - Newly Revised

DIVISION TWO

☐ Pride in Alberta, Grade Four - Newly Revised
☐ Pride in Alberta, Grade Five - Newly Revised
☐ Pride in Alberta, Grade Six - Newly Revised
☐ Pride in Alberta Plus - Newly Revised

DIVISION THREE

☐ Space Age Agriculture - Science - Newly Revised

DIVISION FOUR

☐ Business of Agriculture - Science 10,20,30 - Newly Revised
☐ Career Connections - Poster and Brochure
☐ The Equation - Folder and Booklets
☐ A Quick Dip in the Gene Pool - Multimedia Kit (A/V material, written resources and software <IBM or Mac>)

SUMMER AGRICULTURE EDUCATION INSTITUTE (SAEI)

☐ Summer Agriculture Education Institute - 1991
☐ Summer Agriculture Education Institute - 1992
☐ Cattle Drive Game Board - Poster

EXTRA RESOURCES AVAILABLE

☐ Agriculture Resource Listing - New Edition
☐ AITC Newsletter
☐ Ag Diversity and the Foods We Eat - Lesson Booklet
☐ Growing the Plants We Eat - Chemistry Lesson Booklet
☐ Managing Energy and Change - High School Science Resource on Conservation
☐ IOSTE Brochure

WHO DO WE SHIP IT ALL TO?

Name: ____________________
School Name: ____________________
Address: ____________________
____
Town: ____________________ **Postal Code:** ____________
Phone: ( ) ____________________ **Ag Ambassador Yes** ☐ **No** ☐

Ag in the Classroom Feature Resource:
The Equation: The Story of Science, Technology and Food in a Sustainable World

The Equation is a six booklet series which develops and discusses a simple equation of how agricultural production works and can be/is affected by the decisions we make. The first five booklets, dealing with agricultural land, water, labour, money and man-made inputs, outline issues related to how these inputs and variables affect agricultural productivity. The sixth book looks at the potential outputs yielded from inputs and develops possible solutions to the problems and questions which arise from these inputs. The ultimate aim of this series is to make students aware of the choices available to them and their accountability to the decisions they make. Emphasis is given to the tremendous role and influence technology has played and will continue to play in the realms of agriculture and agricultural productivity.

Copies of *The Equation: The Story of Science, Technology and Food in a Sustainable World* can be accessed from your school library, your school's Agriculture Ambassador or the Ag in the Classroom Program.

We have created a contest to help stimulate interest in this new resource, so please read on ...

Attention Students!!

Enter to Win Your Very Own **Portable Disc-Man**!!

(Please feel free to photocopy this information sheet for your students)

Many years ago, in the year 1996, a young boy set out for a hike in the hills. Along the way he came across an old hermit who thirsted for knowledge of the world which he no longer knew or understood. From where the boy and the hermit sat on the hill, that day in 1996, the world around them looked breathtakingly beautiful. The hermit, quite in awe of all that surrounded them, exclaimed, "With all these wonderful things to use, admire and enjoy, the entire world must be very happy!" Together the boy and the hermit thought and realized that the world in which they lived was ***not*** an entirely perfect place for all its inhabitants. Indeed, a delicate and fragile balance existed between human survival/prosperity and the availability of such resources as land, water, labour, technology and money. How carefully people managed these resources would directly affect agricultural productivity and the ability to sustain world populations. At the root of such a delicate balance the boy and the hermit concluded technology was important to agricultural productivity.

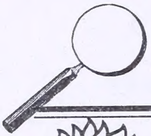
Fifty years later (2046) the boy - now a retired farmer - sits alone on his porch swing, gazing out over the very same hills that fifty years earlier he and his hermit friend had explored. What does he see? How has the world changed in those fifty years? How successful has technology been in sustaining agricultural productivity and world populations?

Demonstrate your understanding of the agricultural equation devised by the boy and his hermit friend. Using either words (maximum 300 words) and/or pictures, show us the world of agriculture/technology as it might appear to the old man in the year 2046.

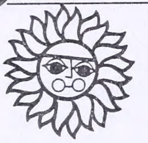
> ***Hint:*** **Get a hold of a copy of *The Equation* from your school library, your school Agriculture Ambassador, or the Agriculture in the Classroom Program.**

CONTEST RULES AND PRIZES:

1. This contest is limited to Junior High school students.
2. All entries will be judged by a panel of three agriculture and education representatives.
3. Prizes will be awarded to the best entries. One prize (a portable disc-man) will be awarded for each grade category (i.e., grade 7, 8 and 9).
4. Please submit only one entry per student.
5. All entries must be received by November 27, 1996.
6. Winning entries will be published in the next AITC newsletter.
7. Don't forget to include your name, address, grade, school and phone number along with your entry.



News & Information



Ag in the Classroom
hopes you will enjoy the
brochure/poster commemorating
our involvement with the
IOSTE Symposium this summer.

News Flash

In our next New Year's newsletter!
Look for our January Survival Kit
featuring our 25 hottest picks
for winter, hands-on creativity and learning!

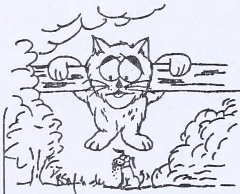
More on Biotech

Biotechnology Information Centre

The Biotechnology Information Centre, and Information Centre of the USDA - National Agricultural Library, has developed a rich source of current biotechnology-related information available via the Internet. The files at the site include bibliographies, resource guides, and educational resources. Numerous links to other biotechnology-related gophers have also been included.

Contact: Access at http://www.inform.umd.edu/EdRes/Topic/AgrEnv/Biotech

(Information borrowed from *The AgBiotech Bulletin*)

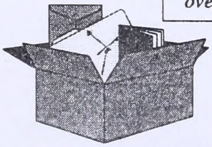


HANGIN' IN

The History of the World
-- According to Student Bloopers

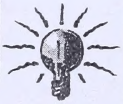
by Richard Lederer

1 *"Socrates was a famous Greek teacher who went about giving people advice. They killed him. Socrates died from an overdose of wedlock."*



2 *"Beethoven wrote music even though he was deaf. He was so deaf he wrote loud music."*

3 *"The sun never sets on the British Empire because the British empire is in the East and the sun sets in the West."*



Creative Graffiti

Agriculture In The Classroom Newsletter

PURPOSE: To provide Alberta educators with a networking tool containing current information on the agriculture industry and related resources that are available for classroom use.

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Doing What Nature Does Best!!

Mother nature provides us with all those delicious foods we love to eat. Fresh from the garden, they're delectable! Unfortunately, as soon as they are plucked from the tree or pulled from the ground, most of these foods soon start to go bad. These lessons will give your students a good understanding of how improvements in food production and packaging help to maintain or improve the quality and freshness of those foods we love to eat.

Division One: **Packaging**

[Adapted from: "Slip Me Some Skin" from *Agriculture and Me Plus* - Division One]

The Lesson:

- Through simple experimentation, your students will gain an appreciation for how commercial wrapping and packaging helps to maintain the freshness of the foods we eat, in much the same way as the natural skins and coats of fruits, vegetables and grains.
- Perfect for a Division One science class on living things!!

Here's What You'll Need:

- 4 apples, 4 oranges, 4 potatoes and a vegetable peeler. Student observation charts designed by you or copied from "Slip Me Some Skin" pp. 6.5-6.7

Time Required:

- 30 minutes to set up and once per hour for first day.
- 10 minutes per day for 5 days.

Procedure:

Introduction and Activity:

1. Divide your students into task groups and explain what each group is to do.
2. Each group will choose a vegetable/fruit for study. They will then prepare and place their vegetables in a variety of test settings (i.e., 2 unpeeled items - 1 in a dark place at room temperature and 1 in a well lit storage place; 1 peeled item in a well lit storage area; and 1 item with three holes poked through the skin in a well lit area)
3. Throughout the day and for the next week, your students will record the changes observed on each of the samples.

Conclusion:

4. After the week's observations, have your students meet and discuss what each of the task forces observed.

Some Little Tidbits of Information!!

- The browning of a peeled apple is caused by oxidation when exposed to air. The peel helps to limit air exchange and oxidation!
- Mould forms on the wound site of vegetable/fruit when airborne spores light on the opening. The peel helps prevent the entry of these spores into the fruit.
- Shrivelling occurs as water is lost through evaporation. The peel slows down this process of evaporation.
- Potatoes turn green due to chemical changes caused by light ...NOTE! The chemicals produced as the potato turns green are toxic. Do not allow your students to eat these potatoes or take them home.

The Latest and Greatest!!

- Edible packaging!! Yum! Yum!! Environmentally conscious, biodegradable packaging is currently being developed. Made of potatoes and wheat starch not only will this packaging decompose more quickly and produce less waste, but it will surely be something good to nosh on!!
- M.A.P. ping our foods!??! Modified Atmosphere Packaging is being used to help lengthen the shelf-life of certain foods by decreasing the amounts of oxygen required by harmful and spoilage bacteria. Oxygen is being replaced inside packages by harmless carbon and nitrogen and, as a result, our food is being kept fresher for longer!!

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Division Four: **Preserving**

[Adapted From: "Moldilox and the Five Pairs" in *The Business of Agriculture, Science 10, 20, 30]*

The Lesson:

- Food tends to spoil when microorganisms get a head-start feasting on our foods before we do! As bacteria (e.g., *Salmonella spp* or *Clostridium botulinum*) or fungi, these microorganisms travel as airborne spores which can contaminate any food items, including even the water we drink!! Freezing, drying, pickling and salting are traditional methods that are used to protect food stuffs from micro organic contamination. Such techniques remove the water and/or make uninhabitable the food that would otherwise be a perfect nesting place for unwanted spores! Through this lesson your students will explore and experiment with a variety of traditional food preservation techniques to discover how preservatives can alter, preserve and even enhance a food's taste and quality.
- This lesson is perfect for a Science 20 class on living systems.

Here's What You'll Need:

- 1 loaf of preservative-free bread, sugar, a mild organic acid (e.g., acetic (vinegar, citric, malic, sorbic, benzoic) and Petri dishes or similar containers.

Time Required:

- One 50 minute class for set up and introduction.
- 5 minutes daily for observations.
- One 50 minute class for results and discussion.

** ***Before beginning it should be noted that this lesson was originally designed to produce five separate experiments. Only two of five possible experiments (sugar and vinegar) will be developed here.***

Procedure:

Preparation and Introduction:

1. Make a growth chamber (at room temperature, dark and with normal air exposure) out of a cardboard box or cupboard.
2. Student data/observations sheets should be designed and distributed.

Activity:

3. Divide your students into two groups. Each will set up their experiment as follows:

   Group One:

   Experimental Conditions = bread heavily sugared on both sides, on open dish in growth chamber.

   Controlled Conditions = bread as bought, on open dish in growth chamber.

   Group Two:

   Experimental Conditions = Lightly spray the bread with acid solution until moisture soaks in; repeat for 20 minutes. On open dish in growth chamber.

   Controlled = bread as bought, on open dish in growth chamber.
4. Students will monitor and record changes occurring in both the controlled and experimental conditions for a week.

Conclusion:

5. Report and discuss results (i.e., When did mould appear on control vs. experimental sample? When did each start to smell or taste funny? Which preservative was most effective in preventing mould?).

If you already think the foods we eat are good, just look at how much better they're getting!!

- UHT - Ultra High Temperature Treatment allows for milk to be left unrefrigerated for greater lengths of time before it reaches the consumer's fridge! Using extremely high temperatures to treat whipping cream is also being researched. So put a cherry on top of that one and enjoy!!

- Where's the beef? Well, wherever it is, it is sure to be around for a lot longer thanks to new preservation techniques. Genetically altered lactic acid bacteria (the stuff they use in yogurt and cheese cultures) is being added to meats and, as a result, it is extending the shelf-life of these products by several weeks.

- Better bread through biotechnology! The quality of wheat has seen dramatic improvements of late. Wheat now boasts a higher protein content thanks to recent research in genetic engineering and traditional hybridization experimentation.